than water; for it is decomposed with facility when rendered a better conductor by the addition of acids or salts; its elements may in numerous cases be obtained and collected without any embarrassment from secondary action, and, *I* being gaseous, they are in the best physical condition f for separation and measurement. Water,, therefore, >J acidulated by sulphuric acid, is the substance I shall generally refer to, although it may become expedient in peculiar cases or forms of experiment to use other bodies (578).

442. The first precaution needful in the construction of the instrument was to avoid the recombination of the evolved gases, an effect which the positive electrode has been found so capable of producing (307). For this purpose various forms of decomposing apparatus were used. The first consisted of straight tubes, each con- *"' taining a plate and wire of platina soldered together by lgt 2o* gold, and fixed hermetically in the glass at the closed extremity of the tube (fig. 20). The tubes were about eight inches long, 0.7 of an inch in diameter, and graduated. The platina plates were about an inch long> as wide as the tubes would permit, and adjusted as near to the mouths of the tubes as was consistent with the safe collection of the gases evolved. In certain cases, where it was required to evolve the elements upon as small a surface as possible, the metallic extremity, instead of being a plate, consisted of the wire bent into the form of a ring (fig. 21). When these tubes were used as measurers, they were filled with the dilute sulphuric acid, inverted in a basin of the same liquid (fig. 22), and placed in an inclined position, with their lg" 2I" mouths near to each other, that as little decomposing matter should intervene as possible; and also, in such a direction that the platina plates should be in vertical planes (455).

443. Another form of apparatus is that delineated (fig. 23).

The tube is bent in the middle; p. 22
one end is closed; in that end
is fixed a wire and plate, a, proceeding so far
downwards, that,,
when in the position figured, it shall be as near
to the angle as